

We claim:

1. An aqueous latex dispersion composition, comprising the emulsion polymerization reaction product of:

- 5 (a) about 2 to about 15 weight percent, based on the total weight of (a) and (b), of a sulfonated alkyd;
- (b) about 85 to about 98 weight percent, based on the total weight of (a) and (b), of one or more ethylenically unsaturated monomers; and
- 10 (c) a catalytic amount of an initiator for free-radical emulsion polymerization,

 wherein components (b) and (c) are fed into an aqueous dispersion of (a) during the emulsion polymerization process.

15 2. The aqueous latex dispersion composition according to claim 1, wherein the sulfonated alkyd comprises the polycondensation reaction product of:

- i. about 10 to about 50 weight percent of one or more of: a glycol or a polyol,
- 20 ii. about 10 to about 80 weight percent of one or more of: a monobasic fatty acid, a monobasic fatty ester, a naturally occurring oil, or a partially-saponified oil,
- iii. about 5 to about 40 weight percent of one or more of: a dicarboxylic acid or anhydride or a poly-carboxylic acid or anhydride,
- 25 and
- iv. about 5 to about 15 weight percent of one or more of: a sulfomonomer or a sulfomonomer adduct containing at least one sulfomonomer group, wherein the weight percent is based on the weight of the sulfomonomer,

wherein the weight percents of (i), (ii), (iii), and (iv) are based on the total weight of (i), (ii), (iii), and (iv).

5 3. The aqueous latex dispersion according to claim 1, wherein the average particle size of the aqueous latex dispersion obtained is from about 60 to about 140 nm.

10 4. The aqueous latex dispersion according to claim 1, wherein the average particle size of the aqueous latex dispersion obtained is from about 70 to about 130 nm.

15 5. The aqueous latex dispersion according to claim 1, wherein the average particle size of the aqueous latex dispersion obtained is less than about 140 nm.

 6. The aqueous latex dispersion according to claim 1, wherein the average particle size of the aqueous latex dispersion obtained is less than about 130 nm.

20 7. The aqueous latex dispersion according to claim 1, wherein the average particle size of the aqueous latex dispersion obtained is less than 110 nm.

25 8. The aqueous latex dispersion according to claim 1, wherein the particle size of the aqueous dispersion of the waterborne alkyd is from about 15 to about 50 nm.

30 9. The aqueous latex dispersion according to claim 1, wherein the particle size of the aqueous dispersion of the waterborne alkyd is from about 20 to about 40 nm.

10. The aqueous latex dispersion according to claim 1, wherein the sulfonated alkyd is provided in an amount from about 3 to about 10 weight percent.

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11. The aqueous latex dispersion according to claim 1, wherein the sulfonated alkyd is provided in an amount from about 5 to about 8 weight percent.

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12. The aqueous latex dispersion according to claim 1, wherein the initiator comprises one or more of: hydrogen peroxide, a potassium peroxydisulfate, an ammonium peroxydisulfate, dibenzoyl peroxide, lauryl peroxide, ditertiary butyl peroxide, 2,2'-azobisisobutyronitrile, t-butyl hydroperoxide, or benzoyl peroxide.

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13. The aqueous latex dispersion according to claim 1, wherein the one or more ethylenically unsaturated monomers comprise one or more of: styrene, α -methyl styrene, vinyl naphthalene, vinyl toluene, chloromethyl styrene, methyl acrylate, acrylic acid, methacrylic acid, methyl methacrylate, ethyl acrylate, ethyl methacrylate, butyl acrylate, butyl methacrylate, isobutyl acrylate, isobutyl methacrylate, ethylhexyl acrylate, ethylhexyl methacrylate, octyl acrylate, octyl methacrylate, glycidyl methacrylate, carbodiimide methacrylate, an alkyl crotonate, vinyl acetate, di-n-butyl maleate, di-octylmaleate, t-butylaminoethyl methacrylate, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate, N,N-dimethylaminopropyl methacrylamide, 2-t-butylaminoethyl methacrylate, N,N-dimethylaminoethyl acrylate, N-(2-methacryloyloxyethyl)ethylene urea, or methacrylamidoethylene urea.

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14. A process for preparing an aqueous latex dispersion, comprising the steps of:

preparing an aqueous dispersion of a sulfonated alkyd to form seed particles; and

5 polymerizing one or more ethylenically unsaturated monomers, in the presence of the sulfonated alkyd resin seed particles, to obtain an aqueous latex dispersion,

wherein the sulfonated alkyd resin is provided in an amount from about 2-15 wt.%, based on the total weight of the sulfonated alkyd resin and
10 the one or more ethylenically unsaturated monomer.

15. The process according to claim 14, wherein the sulfonated alkyd comprises the polycondensation reaction product of:

i. about 10 to about 50 weight percent of one or more of: a glycol or a polyol,
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ii. about 10 to about 80 weight percent of one or more of: a monobasic fatty acid, a monobasic fatty ester, a naturally occurring oil, or a partially-saponified oil,

20 iii. about 5 to about 40 weight percent of one or more of: a di carboxylic acid or anhydride or a poly-carboxylic acid or anhydride, and

iv. about 5 to about 15 weight percent of one or more of: a sulfomonomer or a sulfomonomer adduct containing at least one sulfomonomer group, wherein the weight percent is based on the
25 weight of the sulfomonomer,

wherein the weight percents of (i), (ii), (iii), and (iv) are based on the total weight of (i), (ii), (iii), and (iv).

16. The process according to claim 14, wherein the average particle size of the aqueous latex dispersion obtained is from about 60 to about 140 nm.

5 17. The process according to claim 14, wherein the average particle size of the aqueous latex dispersion obtained is from about 70 to about 130 nm.

10 18. The process according to claim 14, wherein the average particle size of the aqueous latex dispersion obtained is less than about 140 nm.

19. The process according to claim 14, wherein the average particle size of the aqueous latex dispersion obtained is less than about 130 nm.

15 20. The process according to claim 14, wherein the average particle size of the aqueous latex dispersion obtained is less than 110 nm.

20 21. The process according to claim 14, wherein the particle size of the sulfonated alkyd seed particles is from about 15 to about 50 nm.

22. The process according to claim 14, wherein the particle size of the sulfonated alkyd seed particles is from about 20 to about 40 nm.

25 23. The process according to claim 14, wherein the sulfonated alkyd is provided in an amount from about 3 to about 10 weight percent.

24. The process according to claim 1, wherein the sulfonated alkyd is provided in an amount from about 5 to about 8 weight percent.

25. The process according to claim 14, wherein the polymerizing is carried out in the presence of an initiator comprising one or more of: hydrogen peroxide, a potassium peroxydisulfate, an ammonium peroxydisulfate, dibenzoyl peroxide, lauryl peroxide, ditertiary butyl peroxide, 2,2'-azobisisobutyronitrile, t-butyl hydroperoxide, or benzoyl peroxide.

26. The process according to claim 14, wherein the one or more ethylenically unsaturated monomers comprise one or more of: styrene, α -methyl styrene, vinyl naphthalene, vinyl toluene, chloromethyl styrene, methyl acrylate, acrylic acid, methacrylic acid, methyl methacrylate, ethyl acrylate, ethyl methacrylate, butyl acrylate, butyl methacrylate, isobutyl acrylate, isobutyl methacrylate, ethylhexyl acrylate, ethylhexyl methacrylate, octyl acrylate, octyl methacrylate, glycidyl methacrylate, carbodiimide methacrylate, an alkyl crotonate, vinyl acetate, di-n-butyl maleate, di-octylmaleate, t-butylaminoethyl methacrylate, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate, N,N-dimethylaminopropyl methacrylamide, 2-t-butylaminoethyl methacrylate, N,N-dimethylaminoethyl acrylate, N-(2-methacryloyloxy-ethyl)ethylene urea, or methacrylamidoethylethylene urea.

27. In a process for producing an aqueous latex dispersion via emulsion polymerization of at least one ethylenically unsaturated monomer, the improvement comprising:

carrying out the emulsion polymerization process in the presence of sulfonated alkyd seed particles provided in an amount from about 2 to about 15 weight, with respect to the total weight of the latex polymer obtained.

28. The aqueous latex dispersion prepared by the process according to claim 14.

5 29. A coated article, prepared by applying the aqueous latex dispersion of claim 1 to an article, and drying the coating composition.

30. A coating composition, comprising the aqueous latex dispersion according to claim 1.

10 31. The coating composition according to claim 30, further comprising one or more fillers and/or pigments.

32. An article coated with the coating composition of claim 31.

15 33. The article according to claim 32, wherein the article is a member selected from the group consisting of wood, wood by-products, gypsum board, metal, plastic, concrete, a textile product, leather, and masonry.

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